Remarks

In an Office Action dated 14 August 2002, the Examiner rejected claims 1, 3-5, 7, 9-11, 13, 15-17 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No 6,009,331 issued to Ueda and claims 2, 8, 14 under 35 U.S.C.§103(a) as being unpatentable over Ueda in view of U.S. Patent No 5,241,685 issued to Bodin. Applicant has cancelled claims 2, 8, 14 and has amended claims 1, 6, 7, 12, 13, 18.

The Examiner rejected claims 1, 3-5, 7, 9-11, 13, 15-17 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No 6,009,331 issued to Ueda and claims 2, 8, 14 under 35 U.S.C.§103(a) as being unpatentable over Ueda in view of U.S. Patent No 5,241,685 issued to Bodin, noting with respect to claim 1:

> Regarding claim 1, Ueda discloses a system for load balancing, based on class of service (col 7, lines 25-49), for wireless communications networks having a plurality of cells, each cell adapted to serve a plurality of mobile subscriber stations, comprising:
>
> means for determining when assignment of a mobile subscriber station to a cell results in a first criteria being exceeded (S21, fig. 6);
>
> means, responsive to said means for determining, for identifying at least one of a plurality of mobile subscriber stations served by said cell for reassignment to another cell based upon the class of service of said plurality of mobile subscriber stations (S23, fig. 6; col. 7, lines 25-49).

Applicant has reviewed the cited Ueda and Bodin references as well as the Examiner's clearly stated grounds for rejecting the claims. Claim 1 has been amended to more precisely articulate Applicant's claimed invention.

The cited Ueda Patent discloses a wireless communication network that has a service request management feature that maintains a threshold that defines a minimum number of idle channels for a cell site. If a subscriber intiates a service request when the number of idle channels for a cell site is less than the threshold, the service request management feature rejects the service request unless the subscriber has priority service. (column 6, line 52 - column 7, line 23). Similarly, in the case where all channels of a cell site are busy, the service request management feature rejects a subscriber request for service unless the subscriber has priority. (column 7, lines 24-36) In the case of a priority subscriber, a busy channel is made available to the service requesting priority subscriber by handing off a non-priority subscriber to an

adjacent cell site, thereby freeing up a channel to serve the service requesting priority subscriber. (column 7, lines 37-49)

In contrast, Applicant's load balancing system dynamically continually balances the traffic load among a plurality of cell sites by using multiple criteria to determine which cell site is selected to provide service to each mobile subscriber station. Unlike the cited Ueda Patent, Applicant's load balancing process is executed in response to the wireless communication network assigning a cell site to provide service to a mobile subscriber station based upon a first criteria. It is then determined whether this cell site assignment results in secondary criteria being exceeded. If secondary criteria are exceeded by the assignment, the mobile subscriber station and/or other mobile subscriber stations are handed off to other cell sites. As noted in Applicant's specification "Mobile Switching Center 117 reviews the received data and identifies at least one and more likely a plurality of cell sites 106-108 capable of providing service to mobile subscriber station 101 based upon a primary criteria, such as signal strength." Once the call connection is established, Applicant's load balancing system "determines at step 205 whether a secondary criteria is exceeded by the assignment of cell site 108 to provide communication service to mobile subscriber station 101. For example, Mobile Switching Center 117 determines whether the traffic load of cell site 108 exceeds a predetermined threshold, such as 80% of capacity. If the secondary criteria is exceeded, then the cell site selection process proceeds to step 206 to execute a load balancing process to locate a cell site 106 that meets both criteria." The mobile subscriber station and/or other mobile subscriber stations are handed off to other cell sites.

In addition, Applicant's load balancing system reassigns mobile subscriber stations whether or not they have initiated a service request, as a background load balancing maintenance process. As described in the specification: "Process 300 functions to balance the distribution of mobile communication service requests across the plurality of cell sites 106-108 by assigning cell sites 106-108 to service mobile subscriber stations 101 based upon not only the signal strength of the communications between the mobile subscribe station 101 and the base stations 102-104 but also secondary criteria such as: the traffic load of each cell site, the class of

service assigned to each mobile subscriber station. The advantage of process 300 is that since multiple criteria are used for every assignment, the mobile subscriber stations 101 and the associated communication traffic are more evenly distributed over wireless communication network 100."

Thus, the service request management feature of the Ueda Patent teaches rejecting service requests from all but priority subscribers when the number of idle channels falls below a predetermined threshold and, if no idle channel exists, a busy channel is made available to a priority subscriber by moving a non-priority subscriber's call connection to another cell site. There is no suggestion to move a priortiy subscriber to another cell site once the call connection is established, or to load balance among cell sites by relocating subscribers based on additional criteria selected from call management factors, such as: duration of call connection, location of mobile subscriber within the cell, proximity to an adjacent cell, signal strength in adjacent cells, and the like, or to activate a process in a proactive manner to ensure availability of idle channels. As noted in Applicant's specification: "At step 306, the Mobile Switching Center 117 reviews the secondary criteria to determine whether additional handoffs of mobile subscriber stations to other cell sites is advisable. For example, if the relocation of a single mobile subscriber station has little impact on reducing the traffic load below the predetermined threshold, the process may be repeated a number of times to thereby realize processing efficiency since the data collection tasks of process 300 can be reused for subsequent mobile subscriber handoffs and the reduction of the traffic load below the threshold by a predetermined amount can be part of the load balancing processing. If so, processing returns to step 302 for additional processing to reduce the traffic load below the threshold by a predetermined amount."

Applicant has amended independent claim 1 to clarify the recitation of Applicant's load balancing process to distinguish it from the service request management feature of the Ueda Patent as follows:

> A system for load balancing for wireless communication networks having a plurality of cells, each cell adapted to serve a plurality of mobile subscriber stations, comprising:
>
> means, responsive to receipt of a service request from a mobile

subscriber station, for establishing a communication connection for said requesting mobile subscriber station via at least one of said plurality of cells;

means for determining when assignment of said mobile subscriber station to a cell results in a predetermined threshold being exceeded, comprising:

means for measuring a traffic load in said cell,

means for comparing said measured traffic load to a predetermined traffic load threshold;

means, responsive to said predetermined threshold being exceeded, for identifying at least one of a plurality of mobile subscriber stations served by said cell for reassignment to another cell.

Applicant therefore believes that claim 1 as amended is allowable under 35 U.S.C. §102(e) over U.S. Patent No 6,009,331 Issued to Ueda. In addition, analogous amendements have been made to independent claims 7, 13 and it is believed that these claims are allowable under 35 U.S.C. §102(e) over the Ueda Patent for the reasons noted above with respect to claim 1. Furthermore, Applicant believes that claims // are also allowable under 35 U.S.C. §102(e) over the Ueda Patent and/or under 35 U.S.C.§103(a) over the Ueda Patent in view of U.S. Patent No 5,241,685 issued to Bodin since these claims depend on an allowable base claim.

In summary, Applicant has cancelled claims 2, 8, 14 and has amended claims 1, 6, 7, 12, 13, 18. Applicant believes that claims 1, 3-7, 9-13, 15-18 are allowable under 35 U.S.C. §102(e) over the Ueda Patent and/or under 35 U.S.C.§103(a) over the Ueda Patent in view of U.S. Patent No 5,241,685 issued to Bodin.

Applicant requests a Notice of Allowance in this application in light of the amendments and arguments set forth herein. The undersigned attorney requests Examiner Le to telephone if a conversation could expedite prosecution. Applicant authorizes the Commissioner to charge any additionally required payment of fees to deposit account #50-1848.

Respectfully submitted,
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A system for load balancing[, based on class of service,] for wireless communication networks having a plurality of cells, each cell adapted to serve a plurality of mobile subscriber stations, comprising:

means, responsive to receipt of a service request from a mobile subscriber station, for establishing a communication connection for said requesting mobile subscriber station via at least one of said plurality of cells;

means for determining when assignment of [a] said mobile subscriber station to a cell results in a [first criteria] predetermined threshold being exceeded, comprising:

means for measuring a traffic load in said cell,

means for comparing said measured traffic load to a predetermined traffic load threshold;

means, responsive to said [means for determining] predetermined threshold being exceeded, for identifying at least one of a plurality of mobile subscriber stations served by said cell for reassignment to another cell [based upon the class of service of said plurality of mobile subscriber stations].

Cancel Claim 2.

6. (Amended) The system for load balancing of claim [4] 5 wherein said means for identifying further comprises:

means, responsive to said means for effecting, for reviewing the secondary criteria to determine whether additional handoffs of mobile subscriber stations to other cell sites is advisable.

7. (Amended) A method of load balancing[, based on class of service,] for wireless communication networks having a plurality of cells, each cell adapted to serve a plurality of mobile subscriber stations, comprising the steps of:

establishing, in response to receipt of a service request from a mobile subscriber station, a communication connection for said requesting mobile subscriber

station via at least one of said plurality of cells;

determining when assignment of [a] said mobile subscriber station to a cell results in a [first criteria] predetermined threshold being exceeded, comprising:

measuring a traffic load in said cell,

comparing said measured traffic load to a predetermined traffic load threshold;

identifying, in response to said [step of determining] predetermined threshold being exceeded, at least one of a plurality of mobile subscriber stations served by said cell for reassignment to another cell [based upon the class of service of said plurality of mobile subscriber stations].

Cancel Claim 8.

12. (Amended) The method of load balancing of claim [10] 11 wherein said step of identifying further comprises:

reviewing, in response to said step of effecting, the secondary criteria to determine whether additional handoffs of mobile subscriber stations to other cell sites is advisable.

13. (Amended) A system for load balancing[, based on class of service,] for wireless communication networks having a plurality of cells, each cell adapted to serve a plurality of mobile subscriber stations, comprising:

service request processing means, responsive to receipt of a service request from a mobile subscriber station, for establishing a communication connection for said requesting mobile subscriber station via at least one of said plurality of cells;

traffic load determining means for determining when assignment of [a] said mobile subscriber station to a cell results in a [first criteria] predetermined threshold being exceeded, comprising:

traffic load measurement means for measuring a traffic load in said cell,

traffic threshold means for comparing said measured traffic load to a predetermined traffic load threshold;

subscriber class of service identification means, responsive to said [traffic load determining means] predetermined threshold being exceeded, for identifying at least one of a plurality of mobile subscriber stations served by said cell for reassignment to another cell [based upon the class of service of said plurality of mobile subscriber stations].

Cancel Claim 14.

18. (Amended) The system for load balancing of claim [4] 17 wherein said subscriber class of service identification means further comprises:

threshold review means, responsive to said handoff activation means, for reviewing the secondary criteria to determine whether additional handoffs of mobile subscriber stations to other cell sites is advisable.